

## CLAIMS

1. In a tuning fork for use in an inertial rate sensor: a pair of elongated tines which have front and rear surfaces and are disposed symmetrically about an axis, and balancing masses on the front surface of one tine and on the rear surface of the other tine trimmed to reduce quadrature error signal in the rate sensor output and also to maintain mass balance between the tines.
2. In a tuning fork for use in an inertial rate sensor: a pair of elongated tines having free ends of enlarged area, a first balancing mass on the front side of the enlarged area of each of the tines, and a second balancing mass on the rear side of the enlarged area of each of the tines, the first and second balancing masses being offset laterally of each other and the tines being fabricated of a material which is transparent to a laser beam employed in trimming the masses on the rear surfaces of the tines.
3. In a tuning fork for use in an inertial rate sensor:  
a pair of elongated drive tines having front and rear surfaces disposed symmetrically about an axis;  
a pair of pickup tines;  
balancing masses on the front and rear surfaces of the drive tines which are trimmed to reduce quadrature error signal in the rate sensor output, to maintain mass balance between the tines, and to adjust the frequency of the drive mode; and  
masses on the pickup tines for adjusting the frequency of the pickup mode independently of the frequency of the drive mode.
4. In a method of manufacturing a tuning fork for use in an inertial rate sensor, the steps of: forming a pair of elongated tines which have front and rear surfaces and are disposed symmetrically about an axis, and providing balancing masses on the front surface of one tine and the rear surface of the

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5. The method of Claim 4 wherein the balancing masses are provided by applying mass elements to the front surface of one tine and the rear surface of the other tine, and removing portions of the mass elements.

7. In a method of manufacturing a tuning fork for use in an inertial rate sensor, the steps of: forming a pair of elongated tines having free ends of enlarged area with laterally offset balancing masses on opposite sides of the enlarged area of each of the tines, and adjusting the balancing masses on opposite sides of the two tines to reduce quadrature error signal in the rate sensor output and to maintain a balance in mass between the two tines.

8. The method of Claim 7 wherein the balancing masses are adjusted by removing substantially equal amounts of mass from the opposite sides of the two tines.

9. The method of Claim 7 wherein the tines are fabricated of a material which is transparent to a laser beam, and the mass is removed from one side of one of the tines with a laser beam which is passed through the tine.

10. The method of Claim 7 further including the step of removing substantially equal amounts of the balancing masses from the same sides of the tines to adjust the drive mode frequency of the tuning fork.

11. In a method of manufacturing a tuning fork for use in an inertial rate sensor, the steps of: forming an elongated pair of drive tines having front and

5 rear surfaces, forming a pair of pickup tines having front and rear surfaces, providing balancing masses on the front and rear surfaces of the drive tines, and trimming the balancing masses on opposite sides of the drive tines to reduce quadrature offset error without affecting mass balance between the drive tines.

12. The method of Claim 11 further including the step of trimming the masses on the same side of the drive tines to adjust the drive mode frequency of the tuning fork.

13. The method of Claim 11 further including the steps of providing masses on the pickup tines, and trimming the masses on the pickup tines to adjust the pickup mode frequency of the tuning fork.

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